REMARKS

Claims 1-5 and 30-44 are pending in this application. Claims 1-5 and 30-44 stand rejected. By this response, claims 1, 2, 42 and 43 have been amended. In view of the amendments to the claims and the remarks below, Applicants respectfully request that the rejections be withdrawn and that the claims be allowed.

Claims 1-4, 34, 38, 39 and 41-43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,623,145 to Nuss ("Nuss") in view of U.S. Patent Application Publication No. 2005/0082479 to Wallace et al. ("Wallace"). The rejection is respectfully traversed.

Claim 1 relates to a method of detecting an explosive material or composition. Claim 2 also relates to a method of detecting an explosive material. Both claims 1 and 2 have been amended to recite the step of "irradiating a sample comprising an object surrounded by a surrounding material." That the sample includes both an object and a surrounding material is supported throughout the application (*see, e.g.*, paragraphs [0111]-[0112] of the specification). As explained in the present application, the absorption spectra of terahertz radiation resulting from a surrounding material such as cloth, for example, is approximately linear. By differentiating the spectra detected from a sample that includes both an object and a surrounding material, the spectra of the object beneath the cloth can be isolated without knowledge of the exact spectral response of the surrounding cloth. *See* ¶¶ [0111]-[0112]. Therefore, the samples subjected to radiation in claims 1 and 2 of the present application include both an object and a surrounding material. As explained below, both Nuss and Wallace fail to teach or suggest at least this element of claims 1 and 2.

Nuss relates to a method and apparatus for terahertz imaging. The system of Nuss can differentiate between different materials by analysis of the frequency-dependent absorption, dispersion and reflection of THz signals. Nuss, col. 2, ll. 30-31. However, Nuss does not teach that certain materials, such as water, can mask the presence of target materials (e.g., explosives) by affecting the frequency spectrum of the detected THz radiation. Thus, Nuss fails to teach that a sample that is irradiated includes both an object and a surrounding material. For at least this reason, Nuss fails to teach or suggest each element and limitation of claims 1 and 2.

Wallace teaches irradiating a non-rigid sample through a transparent window, while steps are taken to remove the "baseline" signal arising from passage of radiation through the window. For example, Wallace teaches that the detected signal is adjusted by subtracting a baseline signal from the detected signal. Office Action, p. 4 (citing Wallace, ¶¶ [0033]-[0034]). However, in Wallace, the sample being irradiated does not itself include a surrounding material. In Wallace, the sample is placed behind a window with known properties. The sample of the present invention, however, is one that includes a surrounding material whose exact properties are not known in advance. Furthermore, in Wallace, the baseline signal is determined by irradiating the window in the absence of a sample, further indicating that the sample of Wallace does not include any type of surrounding material but is instead limited to a single target object.

In the present application, the effect of the surrounding material is compensated for by "differentiating the signal of the detected radiation." Wallace, on the other hand, provides no motivation to compensate for any surrounding material of the sample because it assumes that there is no surrounding material in the sample itself. Instead, the transparent window of Wallace must be irradiated separate from a sample in order to ascertain the spectra of the window for future compensation of any signals obtained from both the window and the sample. No teaching in Wallace suggests that it is possible to isolate the spectra of the sample from that of the window without irradiating the window in the absence of the sample.

Therefore, neither Nuss nor Wallace teach the irradiating of a sample that includes both an object and a surrounding material. Claims 1 and 2, then, are allowable over the combination of Nuss and Wallace. Claims 3, 4, 34, 38 and 39 depend from claim 1 and are allowable for at least the same reasons that claim 1 is allowable. Claim 41 depends from claim 2 and is allowable for at least the same reasons that claim 2 is allowable.

Claims 42 and 43 both recite an explosive detection apparatus that includes "an optically-driven emitter for irradiating a sample comprising an object surrounded by a surrounding material." As explained above, neither Wallace nor Nuss teach or suggest "irradiating a sample

comprising an object surrounded by a surrounding material." Therefore, claims 42 and 43 are allowable over the combination of Nuss and Wallace.

For at least these reasons, claims 1-4, 34, 38, 39 and 41-43 are allowable over the cited combination. Applicants respectfully request that the rejection be withdrawn and the claims be allowed.

Claims 5, 30-33 and 44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nuss in view of Wallace and U.S. Patent Application Publication No. 2001/0033636 to Hartick et al. ("Hartick"). The rejection is respectfully traversed.

Claim 30 depends from claim 1, which, as explained above, is allowable over Nuss and Wallace. Claims 5 and 31-33 depend from claim 2, which is also allowable over Nuss and Wallace, as explained above. Claim 44 depends from claim 42, which is allowable over Nuss and Wallace as explained above. Thus, both Nuss and Wallace fail to render claims 5, 30-33 and 44 unpatentable. Hartick also fails to remedy the inadequacies of the Nuss/Wallace combination.

Hartick relates to a method and apparatus for detecting explosives in luggage. Hartick, Abstract. However, Hartick fails to teach or suggest a method that includes compensating for signal effects of a surrounding material. Instead, the Hartick method only determines whether detected radiation indicates the presence of an explosive; the Hartick method does not explore the technical difficulties associated with distinguishing a detected signal arising from an explosive material composition from detected radiation arising from surrounding material.

Because neither Nuss, Wallace nor Hartick teaches each element of the independent claims from which claims 5, 30-33 and 44 depend, claims 5, 30-33 and 44 are allowable over the cited combination. Applicants respectfully request that the rejection be withdrawn and the claims be allowed.

Claims 35-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nuss in view of Wallace, Hartick and U.S. Patent No. 6,605,808 to Mickan et al. ("Mickan"). The rejection is respectfully traversed.

Claims 36 and 37 depend from claim 1. Claim 35 depends from claim 2. As explained above, neither Nuss, Wallace nor Hartick teach or suggest each limitation of claims 1 and 2, and thus claims 35-37. Additionally, as explained below, Mickan fails to remedy the shortcomings of Nuss, Wallace and Hartick.

Mickan, which also relates to a diagnostic apparatus that uses terahertz radiation, is silent regarding the use of an apparatus to distinguish radiation received from the target object from radiation received from surrounding objects. Though the Mickan apparatus may be used for, *inter alia*, chemical analyses (*see* Mickan, col. 1, ll. 9-12), there is no mention in Mickan about the technical challenges involved in the distinguishing of explosive materials from surrounding materials.

Because the cited combination fails to render unpatentable claims 1 and 2 from which claims 35-37 depend, claims 35-37 are allowable over the cited combination. Applicants respectfully request that the rejections be withdrawn and the claims be allowed.

Claim 40 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Nuss in view of Wallace and U.S. Patent No. 36,201RE to Miller ("Miller"). The rejection is respectfully traversed.

Claim 40 depends from claim 1. As explained above, claim 1 is not rendered unpatentable by the combination of Nuss and Wallace for at least the reason that both Nuss and Wallace fail to teach or suggest that the irradiated sample includes both an object and a surrounding material. As explained below, Miller also fails to teach at least this element of claim 1, and hence, claim 40.

Miller is cited in the Office Action as teaching the detection of explosives by use of a time of flight ("TOF") method. Office Action, p. 8. However, no where does Miller explain that the Miller device is used to distinguish between explosive material and the materials surrounding the explosive materials. Therefore, Miller also fails to remedy the shortcomings of both Nuss and Wallace.

Because neither Nuss, Wallace nor Miller, individually or combined, teach each of the elements and limitations of claim 1 (from which claim 40 depends), claim 40 is allowable over the cited combination. Applicants respectfully request that the rejection be withdrawn and that the claim be allowed.

In view of the above amendment, Applicants believe the pending application is in condition for allowance. If there are any additional charges in connection with this filing or any subsequent filings (including but not limited to issue fees), the Examiner is respectfully requested and authorized to charge Deposit Account No. 04-1073 therefor under Order No. M0025.0339/P339.

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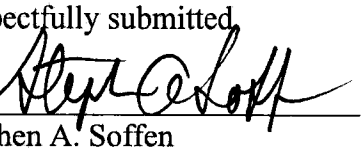
Respectfully submitted,

By 

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